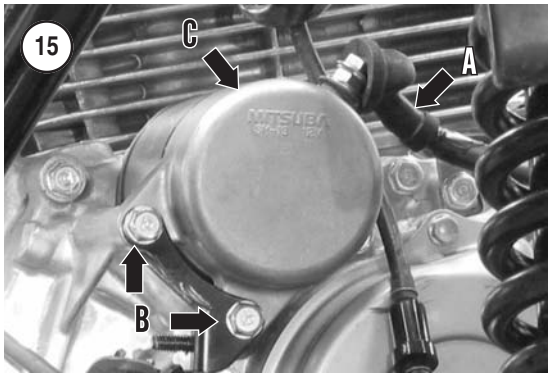
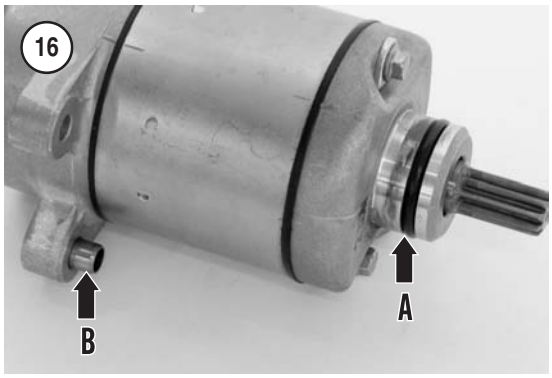




3. Disconnect the two primary wires from the ignition coil (**Figure 12**).

4. Remove the ignition coil and rubber holder from the frame.

5. Remove the rubber holder from the old ignition coil and install it onto the new coil.

6. Install the ignition coil by reversing the preceding removal steps. Make sure all electrical connections are tight and free of corrosion.

STARTER

The starting system consists of the starter, starter gears, solenoid and the starter button.

Table 3 lists starter service specifications.

The starter gears are covered in Chapter Five.

CAUTION

Do not operate the starter for more than 5 seconds at a time. Let it cool approximately 10 seconds before operating it again.

Troubleshooting

Refer to Chapter Two.

Removal/Installation

1. Park the ATV on level ground and set the parking brake.
2. Remove the air box (Chapter Eight).
3. Disconnect the negative battery cable from the battery.
4. Push back the rubber cap, then remove the nut and the starter cable (A, **Figure 15**) from the starter.
5. Remove the two starter mounting bolts (B. **Figure 15**) and the starter (C).
6. If necessary, service the starter as described in this chapter.
7. Install the starter by reversing the preceding removal steps, plus the following:
   a. Lubricate the starter O-ring (A, **Figure 16**) with grease.
   b. Clean any rust or corrosion from the starter cable eyelet.
   c. Be sure to install the hollow dowel pin (B, **Figure 16**) into the starter mounting leg.
   d. Tighten the starter mounting bolts securely.

Disassembly

Refer to **Figure 17**.

1. Find the alignment marks across the armature case and both end covers (**Figure 18**). If necessary, scribe new marks.
2. Remove the two case bolts (A, **Figure 19**), washers (B) and O-rings (C).

NOTE

Record the thickness and alignment of each shim and washer removed during disassembly.

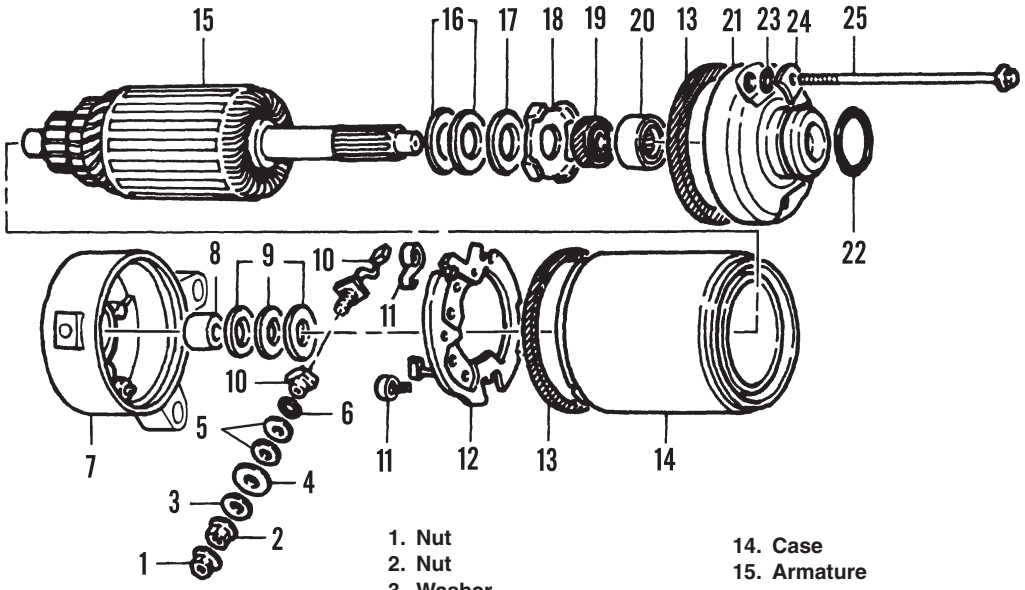
NOTE

The number of shims used in each starter varies. The starter may use a different number of shims than shown in the following photographs.

3. Remove the front cover (D, **Figure 19**) and lockwasher (**Figure 20**).
4. Remove the front shims (**Figure 21**) from the armature shaft.

17

STARTER



1. Nut
2. Nut
3. Washer
4. Insulated washer (large)
5. Insulated washers (small)
6. O-ring
7. End cover
8. Bushing
9. Shim(s)
10. Terminal bolt and brush
11. Brush spring
12. Brush plate
13. O-rings
14. Case
15. Armature
16. Shim(s)
17. Insulated washer
18. Lockwasher
19. Seal
20. Needle bearing
21. Front cover
22. O-ring
23. O-ring
24. Washer
25. Bolt

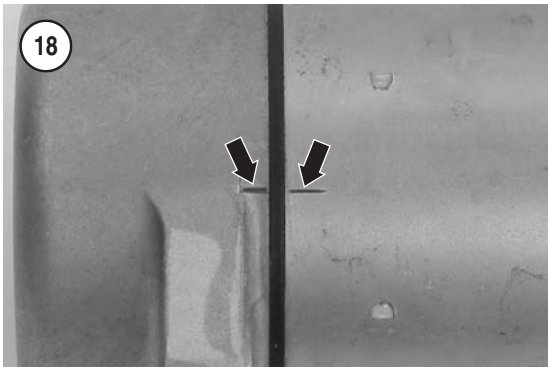
5. Remove the case (**Figure 22**) and end cover (**Figure 23**).

6. Remove the rear shim set (**Figure 24**).

7. Clean all grease, dirt and carbon from the armature, case and end covers.

CAUTION

Do not immerse the wire windings in the case or the armature coil in solvent as the insulation may be damaged. Wipe the windings with a cloth lightly moistened with solvent.



Inspection

1. Pull the brush plate (A, **Figure 25**) out of the end cover.

2. Pull the spring away from each brush and pull the brushes (B, **Figure 25**) out of their guides.

3. Measure the length of each brush (**Figure 26**). If the length is less than the service limit in **Table 3**,

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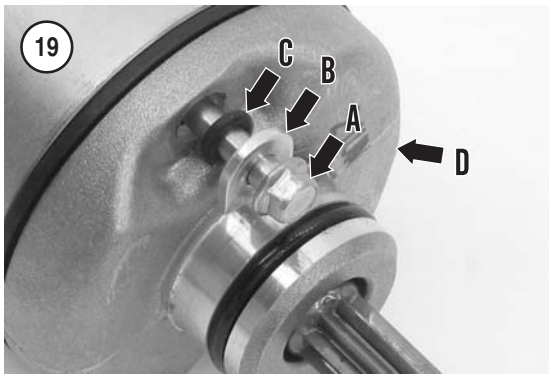

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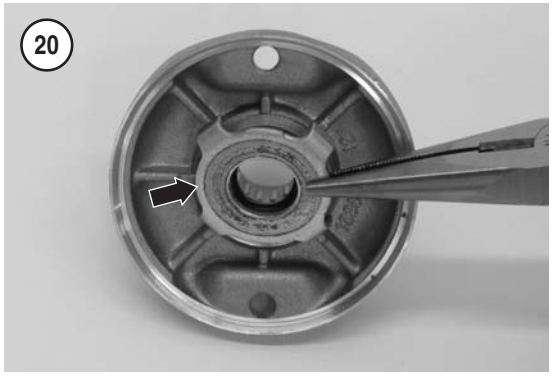

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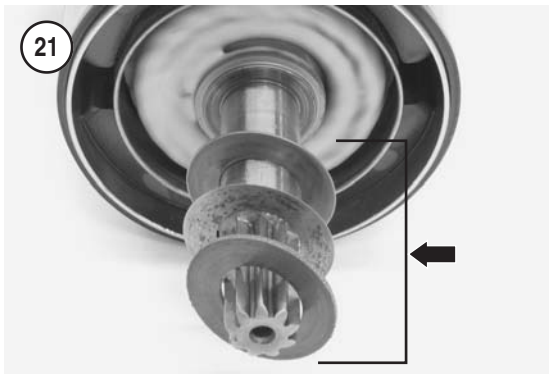

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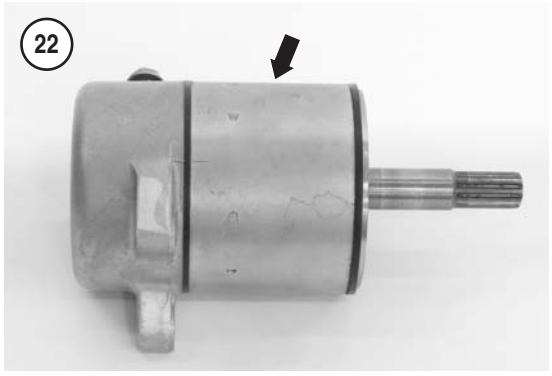

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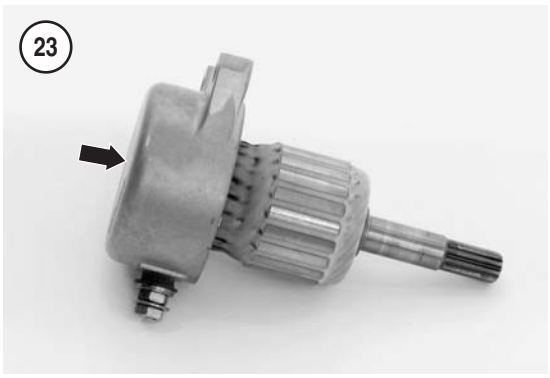

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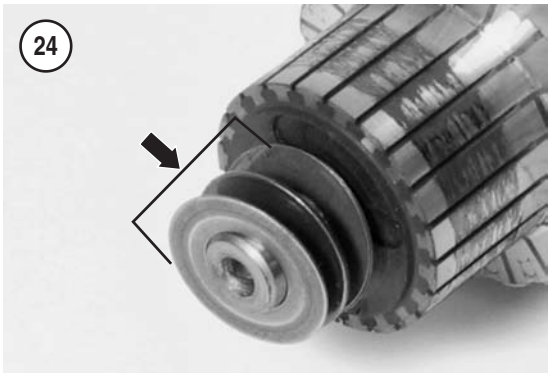

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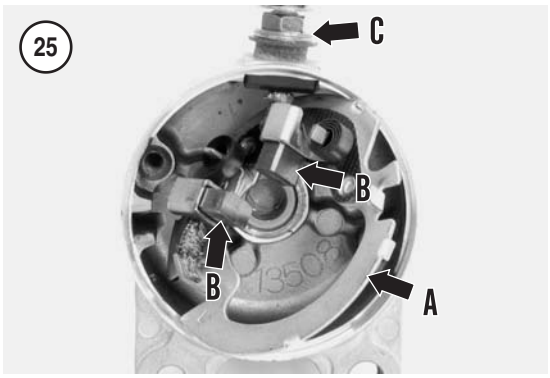

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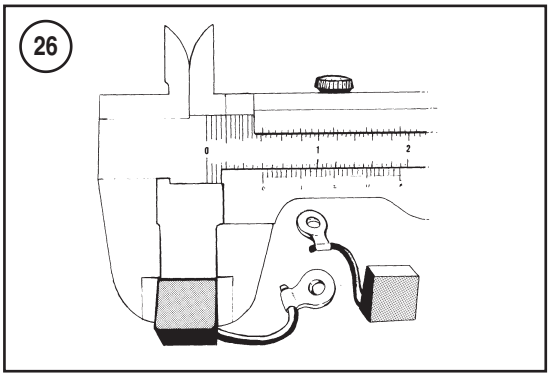

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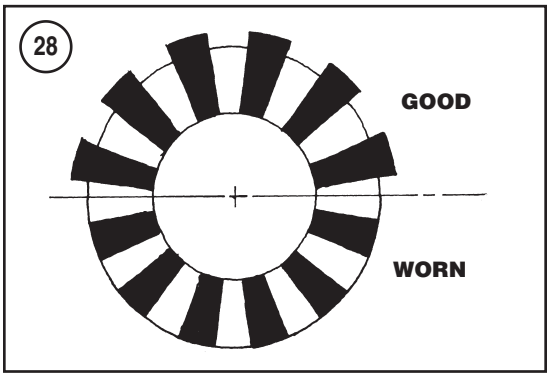


replace both brushes as a set. When replacing the brushes, note the following:

a. It is not necessary to solder the starter brushes when replacing them.

b. Replace the terminal bolt and brush (C, **Figure 25**) as an assembly. Remove the terminal bolt (C, **Figure 25**) and brush, and replace them. Be sure to install the washer set in the order shown in **Figure 17**.

c. Replace the brush plate and brush (A, **Figure 25**) as a set. Remove the brush plate and brush and replace them.

4. Inspect the brush springs and replace them if they are weak or damaged. To replace the brush springs, perform the following:

a. Make a drawing that shows the location of the brush springs on the brush holder. Also indicate the direction in which each spring coil turns.

b. Remove and replace both brush springs as a set.

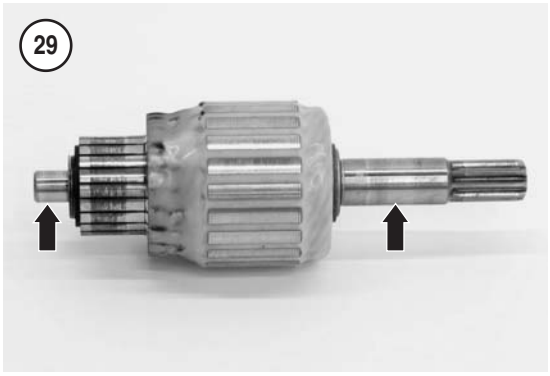
5. Inspect the commutator (**Figure 27**). The mica must be below the surface of the copper bars. On a worn commutator the mica and copper bars may be worn to the same level (**Figure 28**). If necessary, have the commutator serviced by a dealership or electrical repair shop.

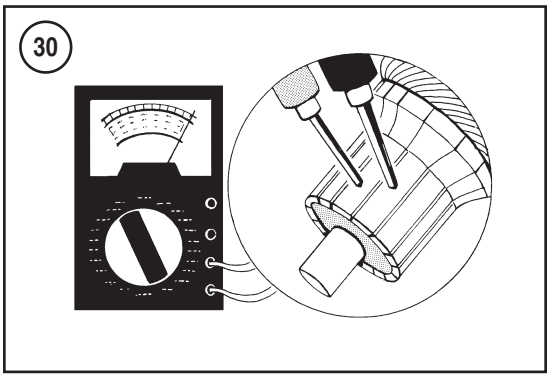
6. Inspect the commutator copper bars for discoloration. A discolored pair of bars indicates grounded armature coils.

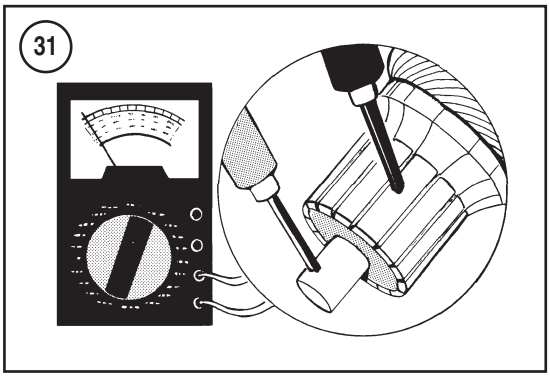
7. Inspect the armature shaft (**Figure 29**) for excessive wear, scoring or other damage.

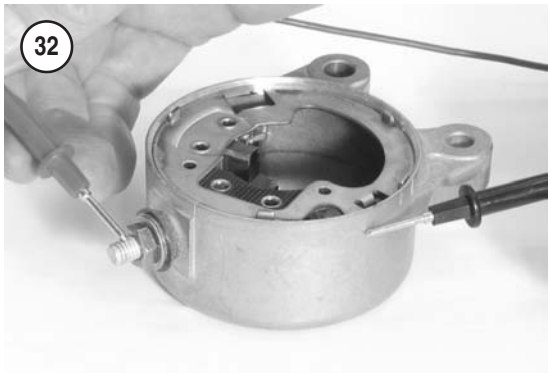
8. Use an ohmmeter and perform the following:

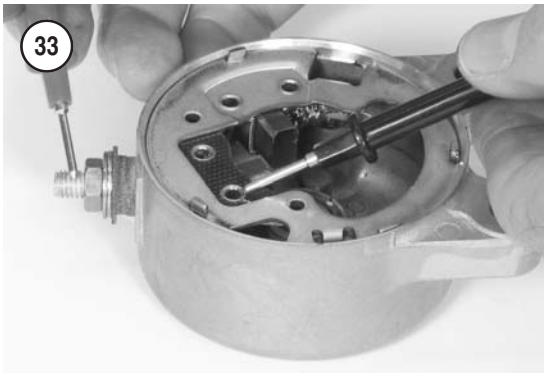
a. Check for continuity between the commutator bars (**Figure 30**). There should be continuity (low resistance) between pairs of bars.

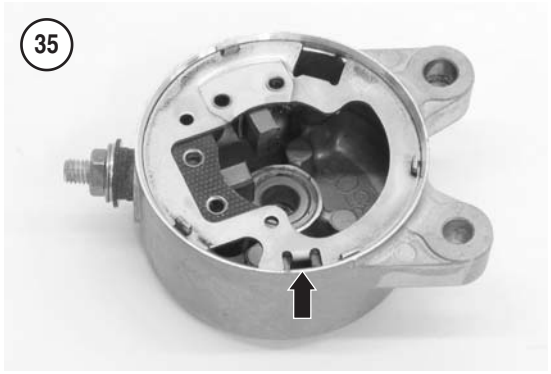












b. Check for continuity between the commutator bars and the shaft (**Figure 31**). There should be no continuity (low resistance).

c. If the armature fails either of these tests, replace the starter assembly.

9. Use an ohmmeter and perform the following:

a. Check for continuity between the starter cable terminal and the end case cover (**Figure 32**). There should be no continuity.

b. Check for continuity between the starter cable terminal and the brush black wire terminal (**Figure 33**). There should be continuity.

c. If the unit fails either of these tests, replace the starter assembly.

10. Inspect the front cover seal and needle bearing (**Figure 34**). Replace the front cover if either part is excessively worn or damaged.

11. Inspect the rear cover bushing. Replace the rear cover if the bushing is damaged.

12. Inspect the case for cracks or other damage. Then inspect it for loose, chipped or damaged magnets.

13. Inspect the O-rings and replace them if they are worn or damaged.

9

Assembly

1. If the brushes were removed, install them into their holders and secure them with the springs.

2. Align the brush plate arm with the notch in the end cover and install the brush plate (**Figure 35**).

3. Install the rear shims (**Figure 24**) on the armature shaft next to the commutator.

4. Insert the armature coil assembly into the rear cover (**Figure 23**). Turn the armature during installation so the brushes engage the commutator properly. Make sure the armature is not turned upside down or the shims could slide off the end of the shaft. Do not damage the brushes.

5. Install the two O-rings (**Figure 36**) onto the case. Then slide the case over the armature (**Figure 22**). Align the marks on the case and end cover (**Figure 37**).

6. Install the front shims (**Figure 21**) onto the armature shaft.

7. Install the lockwasher (**Figure 20**) onto the front cover so the lockwasher tabs engage the cover slots (**Figure 38**).

8. Install the front cover (A, **Figure 39**) over the armature shaft. Align the marks on the front cover and the case (B, **Figure 39**).
9. Lubricate the O-rings (C, **Figure 19**) with oil.
10. Install the bolts, washers and O-rings and tighten the bolts securely.

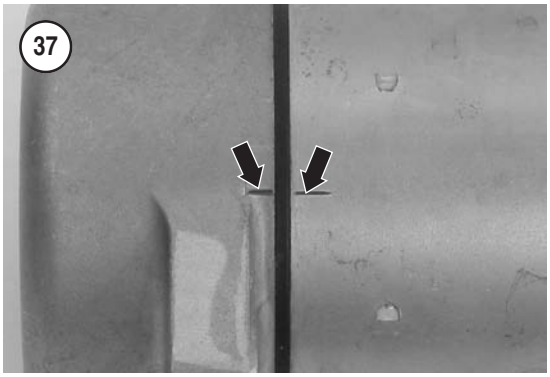
NOTE

If one or both bolts will not pass through the starter, the end covers and/or brush plate are installed incorrectly.

STARTER RELAY SWITCH

System Test

System testing of the starter relay switch is described in *Electric Starting System* in Chapter Two.



Operation Check

1. Remove the seat (Chapter Fifteen), then remove the lid above the battery.

NOTE

To remove the lid fasteners, rotate the screw counterclockwise fully, then pull out the fastener. When turned clockwise, the screw expands the fastener body to secure it in the hole.

2. Turn the ignition switch on and depress the starter button. The starter relay (A, **Figure 40**) should click. If the starter relay did not click, perform the *Voltage Test* in this section.
3. Turn the ignition switch off and install the seat (Chapter Fifteen).

Voltage Test

1. Remove the seat (Chapter Fifteen), then remove the lid above the battery.
2. Lift the rubber cover off the starter relay.
3. Disconnect the starter relay connector (B, **Figure 40**).
4. Connect a voltmeter between the starter relay connector yellow/red (+) and green/red (–) wire terminals at the wiring harness end of the connector.
5. Shift the transmission into neutral and turn the ignition switch on, then depress the starter button.